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## A METHOD OF TESTING THE STRENGTH OF INSTINCTS

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The over-rapid growth of mental tests during the past ten years has not infrequently raised the question whether psychology for the present can not more profitably confine its attention to standardization of the old than to encouragement of the new. But whenever one asks himself how to make mental tests of broad practical service to society, he is inevitably faced with a consideration which must dissatisfy him with the very limited reach of the tests at present available. Although much has already been accomplished in the differentiation of the feeble-minded, and much seems likely to be accomplished in the more scientific selection of employees for minutely specialized tasks, such as telephone operating and clerical work, still it is impossible to escape the conviction that such social needs as vocational guidance can never be greatly furthered by mere statistics as to mental acuity of various sorts in different individuals. Let us suppose, for example, that one man proves extraordinarily apt in all tests of perception, association, etc., but is found afterwards to be wholly lacking in curiosity regarding anything not connected with his animal needs; another man ranks only fairly well, or even below average, in the same tests, but possesses an all-consuming curiosity, which impels him to intense and sustained interests. It would surely be hazardous to predict for the first a larger measure of success than for the second. Indeed, it can hardly be expected that mental tests proper can ever be applied with conspicuous success to any positions which are not of a fairly routine character. The writer had occasion recently to ask a prominent physician to rate in order of importance for the general practice of medicine a large number of mental aptitudes, such as quickness of perception, logical association, rote and logical memory. The latter consented to make an estimate of the degree to which each was serviceable, but added finally that he thought that one might rank low in each of the tests, and yet find his way to the top of his profession; likewise, that one might rank high in each test, and yet make a decided failure. What is true of medicine is abundantly true of law, teaching, salesmanship, even of those occupations

in which the worker is in every sense an employee. In nine cases out of ten more depends on the amount of motive force and on the ability to make successful social contacts than on the ability to perceive, remember, and imagine.

If the hope of psychology is ultimately to offer solutions for practical problems, its tests will have to be concerned more than heretofore with measures of instinctive and emotional tendencies. To be sure, it may seem somewhat untimely to attempt to measure instincts, when there is as yet nothing like universal agreement as to the specific marks of an instinct, but there is at least a fairly general consensus of opinion regarding the more important ones, such as pugnacity, fear, and curiosity; and for the rest, the very effort at quantitative measurement ought to lead in time to more precise characterizations which will prove generally acceptable.

I propose, then, to take as a starting point a classification of instinct very like the one which has been offered by Mc Dougall in his "Social Psychology." We may limit ourselves to ten tendencies which are of great practical importance, and which are sufficiently specific to be termed instincts proper in his limited use of the term. We have, then, as traits to be measured: pugnacity, fear, repulsion, curiosity, self-assertion, self-abasement, tenderness, gregariousness, acquisition, and construction. If we can establish norms for each of these tendencies, and then test a given individual for an excess of pugnacity or for a deficiency in self-assertion, obviously we shall have made a beginning toward a kind of understanding, the social importance of which is not to be denied.

The method which has seemed to me most likely to display in their relative strength the above-mentioned tendencies, is a form of the association test. The subject is given as a stimulus some word strongly suggestive of a certain kind of emotional situation, and he is to react with the first verb form that occurs to him. The supposition here is that just in proportion as the emotion is frequently or strongly experienced by him, he will tend the more quickly and the more uniformly to respond with a verb reaction appropriate to the emotion suggested. Thus if one of the pugnacity stimuli, such as "enemy," "insult," or "attack," is given, a subject by nature very pugnacious may be expected to react with considerable speed, and with a verb-form indicative of resentment or attack. If one of the self-assertion stimuli is offered, such as "career," "success," or "achievement," a self-assertive individual may be expected to reply quickly, and with such expressions as "strive," "struggle," "attain."

Stated more in detail, the method of procedure is as follows. In a preliminary experiment the subject is given a series of twenty neutral words, such as "pencil," "leaf," "chair," etc., and is asked to respond with a verb expressive of his personal reaction to these objects. The average time for these twenty responses represents his normal verb reaction time. Instructions are now impressed upon him to the effect that in what follows he is to interpret each stimulus word as representative of a situation in which he is personally concerned, and that his reaction verb is to indicate an action in which he involves himself personally. With association controlled to this extent, he is supplied one at a time with one hundred stimulus words, by means of which each of the ten instincts is solicited ten times in irregular order. The subject's record for a given instinct will be an expression of the two factors of content and speed. In so far as it depends on content, it will be determined as follows. A reaction evidently provoked by the suggested emotion is scored by giving twelve points' credit to the instinct in question. If the stimulus brings forth a colorless word, which introspection proves to have been unaccompanied by any distinct emotional consciousness, the score for that reaction is zero. If the reaction expresses an emotion different from the one normally expected, as when a pugnacity stimulus yields a tenderness or fear reaction—such as "enemy-forgive," or "enemy-run"—the instinct of tenderness or that of fear is credited with the twelve points, and pugnacity with a zero. In these cases the overready instinct steals for itself extra credit at the expense of the weaker tendencies. It appears from the above that the total score for an instinct which provoked normal responses for each of its ten stimuli would be 120 points. The only variations possible, as far as the content of the reaction is concerned, are those which depend either on the number of neutral reactions, which are without score, or on the extent to which one instinct steals from another.

The score, as far as determined by speed, will depend on the extent to which the reactions connected with a given emotion are made in more or less than the normal verb-association time. For each increment of speed there should be a proportionate increase in credit, and for each retardation a proportionate decrease. Thus if the pugnacity reactions are made at an average of three-fourths the normal time, the total score for pugnacity, otherwise 120, now becomes 160. If the reactions average twice as long as normal, the score will total but 60 points.

Too much emphasis can hardly be laid on the need for giving careful consideration to the subject's introspective report on each reaction. This should be sufficiently detailed to make clear the following points:

(1) That the stimulus word is really interpreted as indicating a situation in which the subject finds himself personally concerned. It makes a considerable difference whether the word "danger" is interpreted as meaning my own personal hazard or the danger to the Mexican republic.

(2) That the verb is one which the subject seems to connect with his own activity. If the word "enemy" is replied to with "attack," it must be ascertained that the attacking is indicative of the subject's reaction toward the enemy, and not of his expectation from the enemy.

(3) That the reaction is not due to a chance association based on recent occurrences. The word "sports," which might normally call forth an expression of play, would, if recently associated with a serious accident, provoke an altogether different response.

Whenever the introspection points to the subject's failure in any one of the above three respects, it will of course be necessary to discard the results for that particular trial, and later in the test to introduce a substitute stimulus word. The introspective report will be further useful in determining whether the verb should be interpreted as colorless or as expressive of an instinct. For example, the word "is" implies emotional indifference when the introspection reveals nothing in particular. But when a subject reacts to "enemy" with "is," and adds, "Jones is my enemy, and I hate him," we have evidence of a pugnacity not adequately represented by the mere word form.

In calculating the score for fear and for self-abasement, exception will have to be made to the rule of deducting credit for slowness of response. The retardation for these two instincts may be due to the subject's natural disinclination to reveal his true emotion with complete abandon. Introspective evidence will have to be very carefully sought in these cases. A concrete instance taken from tests I have given will make clear this type of difficulty. One subject took twice the normal time to respond to "death" with "fear." Questioning elicited the following introspection: "My first thought was fear, but I tried to suppress this tendency, saying to myself that I would certainly not admit a fear of death. I was soon aware, however, that I could think of no other word for the

moment, so I reacted with it." The time which elapsed during this unsuccessful attempt to suppress a fear reaction seems to indicate more rather than less of the instinct. A fear which reasserted itself in spite of attempted suppression would seem entitled to double credit. Moreover, an additional credit should be assigned in this case either to self-assertion or to self-abasement, according to whether the motive for suppression was the effort to control or to conceal the emotion. The former motive would justify an extra credit for self-assertion; the latter, an addition to the score for self-abasement. Obviously it is out of the question to attempt any of the refinements of psychoanalysis in giving tests of a routine nature; hence it may prove ultimately that the only way to uniform scoring lies in discarding all trials in which there is evidence of inhibition of the natural response.

The writer has recently begun a series of instinct tests on a large number of Dartmouth undergraduates, the results of which will be forthcoming shortly. For the present a list of fifty characteristic stimulus words, and the record of a single subject for these fifty words will indicate the method in detail

## RECORD FOR A SINGLE SUBJECT

## PRELIMINARY EXPERIMENT

Neutral stimuli	Reaction	Time
cloth	cut	.6138 sec.
plate	eat	.5580
brush	brush	.4278
house	live	.6882
paper	cut	.5394
soup	eat	.5766
tree	see	.7254
pencil	write	.4278
chair	sit	.4836
bed	sleep	.8056

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 10 | 5.8462

Normal verb reaction time .5846

## FINAL EXPERIMENT (WORDS GIVEN IN IRREGULAR ORDER)

Pugnacity stimuli	Reaction	Time	Introspection	Score
enemy	face	1.0418		7
insult	avenge	.8186		9
attacked	feel	.3720	Thought of fear	See fear
battle	fight	.5394		13
slapped	hurt	.8744		See self-abasement
Extra credits taken from others				0

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 Total score for pugnacity 29

Fear stimuli	Reaction	Time	Introspection	Score
danger	hear	.2976		24
death	fear	.8558		8
terror	feel	.5952		12
rattlesnake	fear	.7812		9
murder	help	.5022	Called for help	13
			Extra credits taken from elsewhere	16
				—
			Total score for fear	82
Repulsion stimuli	Reaction	Time	Introspection	Score
stench	smell	1.358	Disagreeable imagery	6
putrid	smell	.8000	Disagreeable imagery	9
filth	hate	.7068		10
sores	hate	.8744		8
slimy	hate	.6326		11
			Extra credits	0
				—
			Total score for repulsion	44
Curiosity stimuli	Reaction	Time	Introspection	Score
news	hear	.7626		9
strange	see	1.3580		6
novelty	see	.8558		8
puzzle	meet	.6138	Meant to say solve	12
interesting	like	.7440		10
				—
			Total score for curiosity	45
Self-assertion stimuli	Reaction	Time	Introspection	Score
career	have	.4092	Thought of personal career	18
success	have	.3720	Could not avoid word "have"	19
power	have	.5022		14
triumph	have	.4278	Thought of attaining success	17
prestige	like	.7812		9
				—
			Total score for self-assertion	77
Self-abasement stimuli	Reaction	Time	Introspection	Score
chagrin	feel	.6138		12
remorse	feel	.5952		12
disgrace	feel	.7440		10
guilt	feel	.8930		8
punishment	have	.8930	Thought of having been punished	8
			Extra credits	8
				—
			Total score for self-abasement	58

Tenderness stimuli		Reaction	Time	Introspection	Score
mother	love		.5440		13
home	find		.9302		8
family	love		.6882		10
sister	have		.7068	Have always desired a sister	10
parents	love		.6326		11
					<hr/>
					Total score for tenderness 62
Gregariousness stimuli		Reaction	Time	Introspection	Score
crowd	push		.8560		8
alone	hate		1.0790		7
friends	meet		1.0232		7
strangers	meet		.9860		7
solitude	hate		.8186		9
					<hr/>
					Total score for gregariousness 38
Acquisition stimuli		Reaction	Time	Introspection	Score
wealth	get		.8370		8
property	have		.3906		18
possessions	have		.3348		21
money	get		.8186		9
valuable	have		.6326		11
					<hr/>
					Total score for acquisition 67
Construction stimuli		Reaction	Time	Introspection	Score
enterprise	begin		1.0970	The word "have"	7
plans	hear		1.1348	seemed to force its	7
vocation	have		.5952	way into every	12
system	have		.9488	personal	8
policy	have		.6696	attitude	11
					<hr/>
					Total score for construction 45

When a large number of such records have been obtained, it will be possible to make an approximate statement regarding a given individual's emotional nature, as compared with that of his fellows. Whatever the shortcomings of the method here outlined, the demand which it attempts to meet seems to the writer imperative. That economists feel the urgent need of an exact treatment of the instinctive-emotional life is abundantly evidenced by the increasing number of books such as Taussig's "Inventors and Money Makers," Veblen's "Instinct of Workmanship," and Anderson's "Social Value," which manifest in common the tendency to refer economics back to a psychology of instinct and emotion. It behooves the psychologist to supply the economist for this purpose with far more precise instruments than those which have been heretofore available.